Subject: Scholes Cabin 5: Crossing the line

22 Dec 2009 [Message completed 23 Dec 09 6:43 UTM 69.3712 S 0.8007E]

Dear Stirling,

Sailors have always been a bit superstitious, and who would blame them? One of their traditions is to initiate anyone who crosses the Antarctic Circle (66.5 degrees south) for the first time. We crossed that line last night, and the terror began. Big men in funny clothing burst into our cabin, made us lie on the floor, and in fierce, loud, voices ordered us to stand trial today in front of King Neptune.

The Antarctic Circle is that latitude beyond which the sun never goes down on the summer solstice (which just happens to be today). So last night there was no night - just a beautiful, still evening that merged into long dawn.

The sea is as calm as the lake in Rhodes Park, and we saw whales several times.

To see why the sun does not set in summer this far south (and the equivalent distance north of the equator, in six months time), you can do this experiment: take a nice round orange and stick a toothpick in the top and bottom to represent the north and south poles. Then, in a dark room, light a candle, representing the sun, and hold the orange about a meter away from it, at the same height. If you hold the orange with the north and south poles upright and twirl it around, you will see that every part of our model Earth goes through equal periods of light and dark each rotation. Now lay the axis horizontal and point the South Pole straight at the candle. If you rotate the 'Earth' in this position, the entire southern hemisphere is always sunlit, while the north is always dark.

But the real Earth is only tilted by 23.5 degrees off the perpendicular to the plane of its orbit around the sun, perhaps as a result of the collision which formed the moon. Note that in this position, the bit down near the South Pole stays in the light for a full turn of the orange when the axis is pointed towards the torch, the 'solstice'. You can keep the axis pointing exactly the same direction and angle (remember, the Earth is a giant gyroscope) and walk in a circle around the candle, just as the Earth circles the sun. What happens to the day-length at the South Pole? And at the North Pole?

The fun really started at 14:00. The 'bears' (Neptunes's thugs, dressed in masks and carrying sticks) forced us all onto the helideck in shorts and t-shirts. It was about 0 C, but fortunately no wind. There we all had to kneel in front of the King and Queen, and answer for our 'sins'. Every now and then they would douse us with icy seawater (-0.7 C!) and one by one we were led off to be dunked in a bath of freezing water, before being further humiliated and finally allowed to wash off with steaming hot water from the engine room! I did not know you could get so cold and still enjoy it.

Currently we are in thick pack-ice a few kilometres from the unloading point. Advance teams will helicopter off in a few hours.

Love,

Dad